

WO 00/55951

PCT/GB00/00950

CLAIMS

1. A conduction-cooled hardware enclosure (1) comprising first and second sides opposite to each other extending in respective substantially parallel planes, each side comprising portions of at least one one-piece element (2;20) of thermally conductive material, said portions extending in the plane of the side, each element (2;20) including a projecting portion (2a;21) extending towards the opposite side of said first and second sides, and fixing means (3,16,19) fixing the projecting portion(s) (2a;21) extending from the first side to the projecting portion(s) (2a;21) extending from the second side, characterised in that the or each one-piece element (2;20) is formed by casting and machining.
- 15 2. An enclosure according to claim 1, wherein said machining of the or each one-piece element (2;20) comprises machine-finishing of surfaces of the element (2;20) which constitute sealing surfaces of the enclosure (1).
- 20 3. An enclosure according to claim 1 or 2, wherein each one-piece element (2) is a triskelion-form corner piece (2).
4. An enclosure according to claim 1 or 2, wherein each one-piece element (20) is in the form of a plate-like piece (20) including projecting corner legs (21).
- 25 5. An enclosure according to any preceding claim, wherein said fixing means (3,16,19) comprises a plurality of fixing pieces (3).
- 30 6. An enclosure according to claim 5, wherein said fixing pieces (3) have been selected from a range of fixing elements comprising the selected fixing pieces (3) and other fixing elements of different lengths from the selected fixing pieces (3).
7. An enclosure according to any one of claims 3 to 6, wherein the pieces (2,3;3,20) have pairs of adjacent ends and wherein a plurality of dowels (16) are closely received in recesses (2b) formed longitudinally of the ends of the respective pairs of adjacent ends and are fixed against longitudinal movement relative to the receiving ends.
- 35 8. An enclosure according to any preceding claim, wherein

PCT/GB00/00950

WO 00/55951

said projecting portion (2a;21) has one or both of the following features:-

(i) said projecting portion (2a;21) extends into at least 5% of the spacing between said first and second sides,
5 and

(ii) said projecting portion (2a;21) has a length at least equal to its own thickness.

9. An enclosure according to any preceding claim, and
10 containing conduction-cooled hardware in thermally conductive communication with said enclosure.

10. A conduction-cooled hardware enclosure (1) comprising first and second sides opposite to each other extending in respective substantially parallel planes, each side comprising portions of at least one one-piece element (2;20)
15 of thermally conductive material, said portions extending in the plane of the side, each element (2;20) including a projecting portion (2a;21) extending towards the opposite side of said first and second sides, and fixing means (3,16,19) fixing the projecting portion(s) (2a;21) extending
20 from the first side to the projecting portion(s) (2a;21) extending from the second side, characterised in that said projecting portion (2a;21) has one or both of the following features:-

(i) said projecting portion (2a;21) extends into at
25 least 5% of the spacing between said first and second sides,
and

(ii) said projecting portion (2a;21) has a length at least equal to its own thickness.

11. An enclosure according to claim 10, wherein each one-piece element (2) is a triskelion-form corner piece (2).

30 12. An enclosure according to claim 10, wherein each one-piece element (20) is in the form of a plate-like piece (20) including projecting corner legs (21).

13. An enclosure according to claim 10, 11 or 12, wherein
35 said fixing means (3,16,19) comprises a plurality of fixing pieces (3).

14. An enclosure according to claim 13, wherein said fixing pieces (3) have been selected from a range of fixing elements

WO 00/55951

PCT/GB00/00950

comprising the selected fixing pieces (3) and other fixing elements of different lengths from the selected fixing pieces (3).

- 5 15. An enclosure according to any one of claims 11 to 14, wherein the pieces (2,3;3,20) have pairs of adjacent ends and wherein a plurality of dowels (16) are closely received in recesses (2b) formed longitudinally of the ends of the respective pairs of adjacent ends and are fixed against longitudinal movement relative to the receiving ends.
- 10 16. An enclosure according to any one of claims 10 to 15, and containing conduction-cooled hardware in thermally conductive communication with said enclosure.
- 15 17. A conduction-cooled hardware enclosure (1) comprising first and second sides opposite to each other extending in respective substantially parallel planes, each side comprising portions of at least one one-piece element (2;20) of thermally conductive material, said portions extending in the plane of the side, each element (2;20) including a projecting portion (2a;21) extending towards the opposite side of said first and second sides, and fixing means (3,16,19) fixing the projecting portion(s) (2a;21) extending from the first side to the projecting portion(s) (2a;21) extending from the second side, characterised in that said fixing means comprise dowel means (16) closely received in recesses (2b) formed in the projecting portions (2a;21).
- 20 18. An enclosure according to claim 17, wherein said recesses (2b) are substantially co-axial with said projecting portions (2a;21).
- 25 19. A method of producing an enclosure (1) for conduction-cooled hardware, comprising forming at least two one-piece elements (2;20) by casting and machining, each element including projecting portions (2a;21), and fixing together said projecting portions (2a;21) in assembling said enclosure.
- 30 20. A method according to claim 19, wherein said machining comprises machine-finishing of surfaces of the elements (2;20) which constitute sealing surfaces of the enclosure (1).

WO 00/55951

PCT/GB00/00950

21. A method of producing a conduction-cooled hardware enclosure (1), comprising providing a plurality of enclosure pieces of a range of differing sizes and usable in assembling enclosures of respective differing sizes, selecting some (3)
5 of those pieces, assembling a thermally conductive enclosure (1) of a desired size and including the selected pieces (3) and installing electronic hardware in said enclosure (1) in thermally conductive communication with said enclosure (1).
22. A method according to claim 16, and further comprising providing pieces (2) of a standard size and each a triskelion form corner-piece (2), and including the latter pieces (2) in
10 said enclosure (1) during assembly of said enclosure (1).